

WHAT IS CLAIMED IS:

1. A supply plan drafting device for drafting a supply plan of an article or a service in a plurality of supply stations capable of supplying the article or the service, comprising:

5 data storing means for storing unit supply man-hour data on work force and time required to supply the article or the service per unit and unit work-force-type-based cost data on cost per unit according to work force types;

required supply volume inputting means for inputting an entire required supply volume of the article or the service;

10 supply volume distributing means for distributing the input required supply volume to station supply volumes to be supplied from the supply stations based on a distribution parameter;

work force setting means for calculating a station supply man-hour required to supply the article or the service of the distributed station supply volume based on the unit supply man-hour data stored in the data storing means and setting a work-force-type-based work force for the calculated station supply man-hour based on a work force parameter;

15 cost calculating means for calculating a gross cost to supply the station supply volume from the supply stations based on the work-force-type-based work force set by the work force setting means and the unit work-force-type-based cost data stored in the data storing means;

20 parameter changing means for successively changing the distribution parameter and the work force parameter; and

plan setting means for selecting a revised distribution parameter and a revised work force parameter corresponding to a minimum gross cost calculated by the cost calculating means using the work-force-type-based work force that is set by the work force setting means in response to changes in the distribution parameter and in the work force parameter by the parameter changing means and setting, as a supply plan, station supply volumes that are distributed by the supply volume distributing means using the revised distribution parameter and the revised work-force-type-based work forces for the supply stations.

25 2. The supply plan drafting device according to claim 1, wherein the parameter changing means changes the distribution parameter within a suppliable range of the supply stations.

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3. The supply plan drafting device according to claim 2, wherein:  
the suppliable range includes a regular suppliable range based on  
regular operation, and an irregular suppliable range based on irregular operation; and  
the unit work-force-type-based cost data includes regular-operation  
5 unit work-force-type-based cost data on cost per unit according to work force types for  
regular operation, and irregular-operation unit work-force-type-based cost data on cost  
per unit according to work force types for irregular operation.

4. The supply plan drafting device according to claim 3, wherein:  
the irregular suppliable range includes an overtime suppliable range  
10 based on overtime service, and a holiday service suppliable range based on holiday  
service; and  
the irregular operation unit work-force-type-based cost data includes  
overtime unit work-force-type-based cost data on cost per unit according to work  
force types for overtime service, and holiday service unit work-force-type-based cost  
15 data on cost per unit according to work force types for holiday service.

5. The supply plan drafting device according to claim 1, wherein the  
parameter changing means changes ratios of the work force types as a factor of the  
work force parameter.

6. The supply plan drafting device according to claim 5, wherein:  
20 the work force types include regular employees and a plurality of types  
of temporary employees; and  
the parameter changing means changes ratios of the work force types  
by changing percentages of the plurality of types of temporary employees.

7. The supply plan drafting device according to claim 1, wherein the  
25 parameter changing means changes the work force in each of the supply stations as a  
factor of the work force parameter.

8. The supply plan drafting device according to claim 7, wherein the  
parameter changing means changes a gross work force in the supply stations within a  
work force changeable range of the supply stations.

30 9. The supply plan drafting device according to claim 1, wherein the  
parameter changing means successively changes each of the parameters at a  
predetermined interval set for each of the parameters.

10. The supply plan drafting device according to claim 1, wherein:  
the supply stations are production lines for producing the article; and

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the unit supply man-hour data are data on work force and time required to produce a single unit of the article.

11. The supply plan drafting device according to claim 1, wherein:

the supply stations are stations for offering a predetermined service;

5 and

the unit supply man-hour data are data on work force and time required to offer a single unit of the predetermined service.

12. A supply plan drafting program including computer-readable instructions to make a computer function as the supply plan drafting device according to claim 1.

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13. A computer-implemented supply plan drafting method of drafting a supply plan of an article or a service in a plurality of supply stations capable of supplying the article or the service, comprising the steps of:

(a) distributing a required supply volume of the article or the service to station supply volumes to be supplied from the supply stations while successively changing a distribution parameter;

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(b) calculating a station supply man-hour required to supply the article or the service of the distributed station supply volumes based on unit supply man-hour data on work force and time required to supply the article or the service per unit and setting a work-force-type-based work force for the calculated station supply man-hour while successively changing a work force parameter;

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(c) calculating a gross cost to supply the station supply volumes to be supplied from the supply stations based on the set work-force-type-based work force and unit work-force-type-based cost data on work-force-type-based cost per unit; and

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(d) selecting a revised distribution parameter and a revised work force parameter corresponding to a minimum of the gross cost calculated in response to changes in the distribution parameter and the work force parameter and setting as a supply plan station supply volumes that are distributed using the revised distribution parameter and the revised work-force-type-based work forces for the supply stations.

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14. The supply plan drafting method according to claim 13, wherein the step (a) changes the distribution parameter within a suppleable range of the supply stations.

15. The supply plan drafting method according to claim 14, wherein:

the suppliable range includes a regular suppliable range based on regular operation, and an irregular suppliable range based on irregular operation; and

the unit work-force-type-based cost data includes regular-operation unit work-force-type-based cost data on cost per unit according to work force types for regular operation, and irregular-operation unit work-force-type-based cost data on cost per unit according to work force types for irregular operation.

16. The supply plan drafting method according to claim 15, wherein:

the irregular suppliable range includes an overtime suppliable range based on overtime service, and a holiday service suppliable range based on holiday service; and

the irregular operation unit work-force-type-based cost data includes overtime unit work-force-type-based cost data on cost per unit according to work force types for overtime service, and holiday service unit work-force-type-based cost data on cost per unit according to work force types for holiday service.

17. The supply plan drafting method according to claim 13, wherein the step (a) successively changes the distribution parameter at a predetermined interval.

18. The supply plan drafting method according to claim 13, wherein the step (b) changes ratios of the work force types as a factor of the work force parameter.

19. The supply plan drafting method according to claim 18, wherein:

the work force types include regular employees and a plurality of types of temporary employees; and

the step (b) changes ratios of the work force types by changing percentages of the plurality of types of temporary employees.

20. The supply plan drafting method according to claim 13, wherein the step (b) changes the work force in each of the supply stations as a factor of the work force parameter.

21. The supply plan drafting method according to claim 20, wherein the step (b) changes a gross work force in the supply stations within a work force changeable range of the supply stations.

22. The supply plan drafting method according to claim 13, wherein the step (b) successively changes the work force parameter at a predetermined interval.

23. A computer-implemented production plan drafting method of drafting a production plan for producing an article in a plurality of production lines every plan-executing period including a plurality of operating days, comprising:

a production-line-based planned production volume provisionally determining step of allocating a planned production volume during the plan-executing period to the production lines;

5 an operating-time setting step of calculating an operating time in each of the production lines during the plan-executing period corresponding to a provisionally determined tact time in each of the production lines and the production-line-based planned production volume, based on a relation among tact time, planned production volume and operating time in each of the production lines;

10 a number-of-workers calculating step of calculating the number of workers required in each of the production lines based on the set operating time;

a production-line-based personnel cost calculating step of calculating a personnel cost in each of the production lines after distribution of the calculated number of workers to worker categories with different hourly wages; and

15 a gross personnel cost calculating step of calculating a gross personnel cost in all the production lines by summing personnel costs in the respective production lines, wherein

a minimum gross personnel cost is calculated while adjusting the number of workers distributed to the worker categories, the tact time, and the planned production volume allocated to each of the production lines.

20 24. The supply plan drafting method according to claim 23, wherein a gross personnel cost in all the production lines is calculated using a Petri net model.

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